

Evaluating Beef Herd Electronic Information Systems

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Years ago, Dr. Harlan Hughes' analysis of North Dakota cow/calf operations showed that those actively using their "own-farm facts" tended to have lower unit costs of production per lb. of calf weaned (Figure 1). They also were the most profitable over time. Creating and using management information was, and still is, essential to improve herd efficiencies, reduce unit costs and take advantage of market opportunities.

Technology – Herd Electronics

Technology has changed significantly since Harlan made these observations. Radio Frequency Identification (RFID) technology is becoming reliable and the tags more cost effective.

Suppliers have many products that complement the RFID technology. These offer the capability to capture a range of basic identification information to advanced performance monitoring and treatment history. Manager time increases to log supplemental animal information.

The allure of these systems is ease of capture of identity and production information, replacing manual systems. From a production management perspective, the potential to reap time and production efficiencies is attractive.

However, from a business management point of view, the underlying questions remain:

- Will you use the information?
- Will it be a profitable investment?

It's necessary to define the system costs, potential benefits, an action plan to harvest them and establish whether or not the change will be profitable. Adding costs to your herd without offsetting benefits simply reduces profitability.

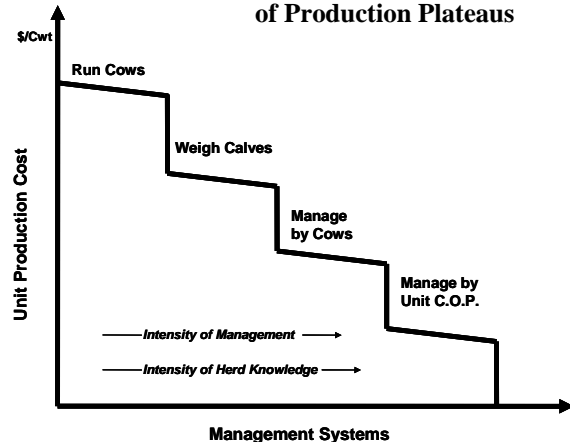
The Partial Budget

A partial budget is used to assess the profitability of a herd electronics investment plus added labour and management time. The affordability and desirability aspects can be pursued if the change has a positive expected net advantage.

Budget input came from three sources:

- Suppliers' system components lists (Figure 2),

Figure 1: Management Systems & Cost of Production Plateaus



Source: Dr. Harlan Hughes, Extension Economist, NDSU (retired)

- An *AgriProfit\$* cow herd enterprise analysis for southern Alberta, and
- Common sense estimates of time needed to gather the data and manage the information. Producers should use their own-farm facts and estimates of time and benefits.

Budgeted production parameters are shown in Figure 3. Expected changes in production and economic measures, or benefits to be valued, are listed in Figure 4. These benefits are herd specific and should be based on realistic notions of what can be achieved. Budget assumptions relate to:

- improved cow feeding efficiency with a feeding program based on observed cow weights
- long term herd productivity improvements based on selection by cow performance, and
- a "sort premium" available by grouping calves in tight, consistent sale lots.

Figure 2: Herd Electronics Capital Costs

Description	Investment \$
Handheld Reader	\$1,400
Info System Unit	1,800
Alleyway Load Bars	1,400
Alleyway Platform	1,050
Misc. Installation Cost	500
Total Capital Outflow	\$6,150
Annualized Capital Costs	\$1,055.43
discount rate (i) =	10.0%
expected life-years (n) =	7
depreciation rate/yr. (d) =	15.0%

Figure 3: Production Parameters

Cows Wintered	254
Calves Weaned	239 head
Avg. Wean Wt.	545.1 lbs/head
Lbs Weaned	512.9 /cow wintered
<u>Added Labour hrs/cow</u>	
Read & Upload	0.017
Weigh Calves	0.008
Weigh Cows	0.008
Use Info	0.042
<u>Total Labour</u>	<u>0.075</u>
	@ \$10 /hour
	= 5 min/cow
	= 19 hrs total

Figure 4: Estimated Benefits of "Change"

<u>Cow Feed Efficiency</u>	
Base feed cost	\$135.69 /cow
Efficiency gain	2.0%
<u>Productive Efficiency</u>	
Efficiency gain	1.0%
Added Lbs Weaned	5.1 /cow wintered
Market Price	\$1.00 /lb
<u>Calf Sort Premium</u>	
Premium	\$0.01 /lb

Partial Budget Results

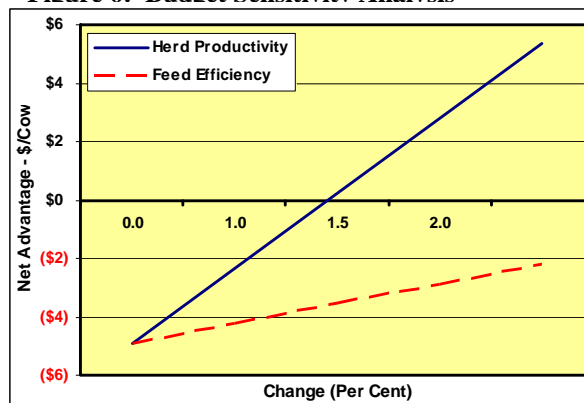
The partial budget analysis (Figure 5) tallies the added costs and benefits associated with acquiring the herd electronics system, *assuming all of the benefits, as listed in Figure 4, are achieved*. In other words, if the equipment is purchased, the manager puts in the time to collect the information and then continues on to search out and implement actions to gain each of the efficiencies, the net advantage works out to over \$8/cow. In a world where per cow improvements in the \$4 - \$6/cow range are considered significant, this opportunity should be given serious consideration.

Figure 5: Partial Budget

Decision to be made: <u>Should I add an electronic reader & scale to my cow herd & use management information?</u>	
Disadvantages:	Advantages:
Added Costs:	Added Revenues:
Feed \$0.00	Productive Efficiency Gains
Other Variable Costs 0.00	5.1 lbs @ \$1.00 /lb \$5.13
Labour 0.75	Calf Sort Premium:
Capital Costs 4.16	518.0 lbs @ \$0.01 /lb 5.18
Subtotal: <u>\$4.91</u>	Subtotal: <u>\$10.31</u>
Reduced Revenue:	Reduced Costs:
0 lbs @ \$ 0.00 /lb \$0.00	Feed \$2.71
	Other Variable Costs 0.00
	Labour 0.00
	Capital Costs 0.00
Subtotal: <u>\$0.00</u>	Subtotal: <u>\$2.71</u>
Total Disadvantages: <u>\$4.91</u>	Total Advantages: <u>\$13.02</u>
Net Advantage (Disadvantage): <u>\$8.12 / Cow</u>	

The budget does not show that the base cost of installing the technology, reading calf tags and transferring the data to the computer amounts to \$4.50/cow. Furthermore, if the balance of the time is invested in weighing cows and working with the data, and there is no measurable benefit, the net loss would be just under \$5/cow ... this is dead weight the herd cannot afford to carry.

Figure 6: Budget Sensitivity Analysis



Sensitivity of the budget results to feed and productivity efficiencies is portrayed in Figure 6. It is clear that the investment in technology and management time has promise in directing long term herd management and breeding choices. On the other hand, if the sole purpose of acquiring the technology is directed at herd feed cost savings, there is not much promise.

Home Stretch

Profitability in cow herds is becoming increasingly tied to the producer's ability to create and use management information to identify, evaluate and implement business change. While herd electronics are touted as the next great opportunity to "managing by information", the analysis of this action is clear. Answers and value don't simply jump out of the data. There must be opportunity in the business for these and other gains. More importantly, the onus is on the manager to use the management cycle (measure, analyze, plan and implement) to find and seize on profit opportunities.

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